

REMARKS

The Office Action of January 14, 2005 has been received and its contents carefully considered. In response, the present Amendment makes revisions in the drawings and specification, as will be discussed in more detail below. In addition, the Amendment cancels several claims, revises other claims, and adds two new claims to further protect the invention.

Turning first to section 1 of the Office Action, the present Amendment forwards a replacement sheet for Figure 12. The replacement sheet designates what is shown as prior art. Accordingly, the objection to Figure 1 should be withdrawn.

Section 2 of the Office Action objects to the drawings on several grounds. One of these grounds is that reference numbers “1” and “2” have been used inappropriately. Reference numbers “1” and “2” do not appear in the drawings, and the present Amendment deletes them from the specification. Accordingly, it is respectfully submitted that this ground of objection has been overcome.

Another ground of objection in section 2 of the Office Action pertains to duplicate use of reference numbers “110,” “120.” and “121.” The present Amendment responds to this ground of objection by making changes in Figures 7 and 8 and by making conforming changes to the specification where appropriate. More specifically, the present Amendment forwards a replacement sheet of drawings that deletes reference number “110” from Figure 7 (and also deletes reference number “111”) and that changes Figures “120” and “121” in Figure 8 to “115” and “116,” respectively.

Section 2 of the Office Action also comments that using two reference characters for elements is confusing. In response, the replacement drawings attached hereto delete

reference numbers in Figures 7 and 9, so that these figures no longer depict double-numbered elements. The Amendment also makes conforming changes in the specification, where appropriate.

In view of the foregoing, it is respectfully submitted that the drawing objections in section 2 of the Office Action should be withdrawn.

Section 3 of the Office Action objects to the drawings on the ground that they do not include various reference characters that are mentioned in the text. With the exception of symbols that are well known (e.g., "L" for inductance), the present Amendment deletes such reference characters from the specification. Since there is no longer a disparity between reference characters used in the specification and reference characters appearing in the drawings, the objection in section 3 of the Office Action should be withdrawn.

The final drawing objection appears in section 4 of the Office Action, which notes that reference characters shown in Figure 4 of the drawings are not mentioned in the specification. In reply, the present Amendment forwards a replacement drawing for Figure 4, in which the reference numbers are deleted and only the circuit is shown. Accordingly, the drawing objection in section 4 of the Office Action should be withdrawn.

Section 5 of the Office Action objects to the disclosure for two informalities. The present Amendment cures one of these informalities by adding a cross-reference to the provisional application whose priority is being claimed. The other informality is being corrected by changing "Z₃₃" to "Z₂₃" in equation (7). The objection to the disclosure should therefore be withdrawn.

Turning next to section 7 of the Office Action, claims 4 and 5 have been rejected for obviousness-type double patenting over the Assignee's patent 6,677,835. However, the present Amendment revises independent claim 4 to recite that "the π type circuit comprises a plurality of bonding wires, each of the bonding wires having an inductance of about 0.5nH and a resistance of about 0.2 ohms or less." This is supported (*inter alia*) by the top portion of Table 4 (2-1), on page 21 of the application. As a result of this revision to claim 4, it is respectfully submitted that the invention now defined by claim 4 would not have been obvious from what is claimed in patent 6,677,835.

It is noted that the present Amendment also makes revisions in other portions of claim 4 in order to improve its form under U.S. claim-drafting practice. Furthermore, the present Amendment adds new independent claims 10 and 11 to further protect the second embodiment of the invention. Claim 10 is the same as claim 4, except that claim 10 recites that "the π type circuit comprises a plurality of bonding wires, each of the bonding wires having an inductance of about one nH and a resistance of about 0.4 ohms or less." This is supported (*inter alia*) by the top portion of Table 4 (2-2), on page 22.

Claim 4 (in its amended form) and claim 10 recite different values for the inductance and resistance, but in both claims the ratio of resistance to inductance is about 0.4 ohms (or less) per nH. New claim 11 is the same as claim 4, except that it recites that "the π type circuit comprises a plurality of bonding wires, each of the bonding wires having about the same impedance and a ratio of resistance to inductance of about 0.4 ohms per nH or less.

Sections 10 and 11 of the Office Action reject claims 4 and 5 for anticipation by either U.S. patent 6,677,835 to Noguchi et al or the publication of the application that

matured into the Noguchi et al patent. As was noted above, claim 4 has been revised to recite that “the π type circuit comprises a plurality of bonding wires, each of the bonding wires having an inductance of about 0.5nH and a resistance of about 0.2 ohms or less.” This is not disclosed by the Noguchi et al patent (or publication), so the rejections for anticipation should be withdrawn.

Before proceeding further, however, it is appropriate to consider patent 4,768,079 to Kandpal et al. The Kandpal et al patent (which will hereafter be called simply “Kandpal”) is cited in section 14 of the Office Action, in the rejection of claims 8 and 9 (now cancelled) for obviousness.

The resistance and inductance of a bonding wire would depend on such factors as the length of the bonding wire, the diameter of the bonding wire, the material from which the bonding wire is made, and the shape in which the bonding wire is bent. However, section 14 of the Office Action appears to interpret Kandpal’s disclosure in terms of nanohenrys per ohm for a typical bonding wire. Figure 3A of the Kandpal patent shows an inductance of 1 nH and a resistance of 1 ohm for a gold bonding wire that is 100 mils long and 7/10 mil in diameter, bent in a curve as shown for a lead 22 in Figure 1A of the reference (see Kandpal’s column 4, lines 37-42 and 65-67, and column 5, lines 25-32).

Figure 3A of the Kandpal patent also seems to show an inductance of 0.01 nH and a resistance of 0.1 ohm for another gold bonding wire that is 7/10 mil in diameter, with the second bonding wire being “as short as possible” (see column 4, lines 39-42). From this, an ordinarily skilled person would likely conclude from the Kandpal patent that a typical bonding wire has an inductance of around 0.1 nH per ohm if the bonding wire is very short, and that the inductance rises about tenfold (to 1.0 nH per ohm) when the length of

the bonding wire increases to 100 mils. Presumably, the inductance would be around 0.5 nH per ohm at some intermediate length between very short and 100 mils, and would be more than 1.0 nH per ohm for lengths greater than 100 mils.

Claim 4 now recites that each of the grounding wires has “an inductance of about 0.5 nH and a resistance of about 0.2 ohms or less.” Since an ordinarily skilled person who was guided by the Kandpal reference would likely conclude that a typical bonding wire of intermediate length has a resistance of around 1 ohm if its inductance is 0.5 nH, it is respectfully submitted that the invention now defined by claim 4 would not have been obvious from the Noguchi et al patent (or publication) together with the Kandpal patent.

Similarly, it is respectfully submitted that the invention defined by new claim 10 (“wherein the π type circuit comprises a plurality of bonding wires, each of the bonding wires having an inductance of about one nH and a resistance of about 0.4 ohms or less) and the invention defined by new claim 11 (“wherein the π type circuit comprises a plurality of bonding wires, each of the bonding wires having about the same impedance and a ratio of resistance to inductance of about 0.4 nH per nH or less”) are patentable over Noguchi et al and Kandpal.

Section 9 of the Office Action rejects independent claim 1 (along with two dependent claims) for anticipation by a Japanese patent publication to Kuroda et al. However, claim 1 has been amended to recite that “the two-port circuit for impedance comprises a bonding wire having a ratio of resistance to inductance of about 0.4 ohms per nH or less.” This inductance-to-resistance ratio is supported (*inter alia*) by values that are depicted in Table 2, on page 12 of the application, and by the previously-mentioned

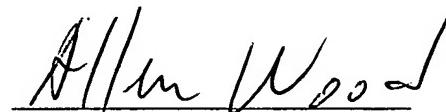
portions of Table 4. It is respectfully submitted that the Koroda et al reference does not anticipate the invention now defined by claim 1. Moreover, for reasons along the lines discussed above with respect to the Kandpal reference, it is respectfully submitted that the invention defined by claim 1 would not have been obvious.

Since the remaining claims depend from the independent claims discussed above and recite additional limitations to further define the invention, they are patentable along with their independent claims and need not be further discussed.

It is noted that this application has been amended to include four independent claims. Accordingly, an additional claim fee of \$200 is included in a remittance that is being submitted concurrently.

For the foregoing reasons, it is respectfully submitted that this application is now in condition for allowance. Reconsideration of the application is therefore respectfully requested.

Respectfully submitted,



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IN THE DRAWINGS:

Please enter the four replacement sheets (which include Figures 4, 5-9, and 12) that are attached to this Amendment.